

## **FROM BENCH TO APPLICATION: ANTHOPLUS – ANTHOCYANIN PRODUCTION PLATFORM USING PLANT SUSPENSION CULTURES AS GREEN FACTORIES (ERA-IB)**

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Anthocyanins are water-soluble pigments that colour the fruit and flowers of many plants. More than 635 different anthocyanins have been identified, distinguished by methylation, glycosylation and acylation with both aliphatic and aromatic groups. There is mounting evidence that consumption of anthocyanin-rich food promotes health, supported by many recent studies of anthocyanin-rich fruits such as blueberry, bilberry and cranberry.

Their relative abundance in the diet and their potency against a range of chronic diseases have made anthocyanins the subject of intense research in experimental and preventive medicine and, more recently for formulating natural colours, a fast growing market. However, the limited range of anthocyanins commercially available and the expense of pure preparations mean that most research is done with crude extracts of plants which are not standardised with respect to the particular anthocyanins they contain, nor the amounts of each anthocyanin in the extract. Variations in anthocyanin decoration account for differences in colour stability and hue of anthocyanins and underpin the need for developing production systems for pure anthocyanins for investigating the effects of chemical specificity on uptake, signalling and physiology, toxicity of anthocyanins for medical applications.

In ANTHOPLUS robust new plant cell cultures will be developed for the stable production of a wide variety of anthocyanins in green factories. These cell cultures, uniquely, allow sustained, high level production of diverse anthocyanins with novel complexity in side chain decoration, for bioavailability, bioefficacy and mechanistic research in experimental.